

### **REMARKS**

Claims 1-25 remain in the application. The applicant has amended claim 19 to more clearly define the invention. In view of the amendment and the following arguments, the applicant respectfully submits that the pending claims 1-25 are in condition for allowance now.

#### **I. Rejection of Claims 1, 8, 9, and 22 Under 35 U.S.C. 102(e)**

Claims 1, 8-9, and 22 have been rejected under 35 U.S.C. 102(e) as being anticipated by International Patent Application Publication WO99/53867 to Cheon. In particular, the Examiner took the position that Cheon teaches an electron-larynx including a linear transducer (element 25 in FIG.2). The applicant respectfully disagrees with the Examiner's conclusion.

Cheon teaches an electron-larynx having a vibrator 25, which, in response to an input pulse signal, vibrates a vibrating plate 15. Transformation from an input signal to an output vibration can be implemented with a variety of forms. For example, as disclosed in U.S. Patent No. 3,978,286 to Watson, which is cited by the Examiner in the subject Office Action, the transformation from the input signal to the output vibration is implemented by using a striker to beat a diaphragm, which is clearly not a linear transformation. Cheon does not teach how the vibrator 25 transforms the input pulse signal to the output vibration. However, the claim 1 in the present application requires that a linear transducer is used to transform the input signal to the output vibration, such that the output vibration is a substantially linear function of the input signal. Therefore, Cheon cannot anticipate claim 1 in the present application.

Dependent claims 8 and 9 depend from claim 1 and include all the limitations of claim 1. Therefore, claims 8 and 9 should not be considered as being anticipated by Cheon.

Independent claim 22 claims an electro-larynx having a waveform generator configured to selectively generate an input signal, which has a harmonic structure corresponding to a normal glottal excitation. In contrast, Cheon teaches an electro-larynx having an oscillating signal output unit 21, which outputs a pulse signal with a pulse width determined in accordance with the time constant of the second time constant circuit 217 (page 14, lines 1-3). Cheon does not teach or suggest an electro-larynx configured to generate an input signal having a harmonic structure corresponding to a normal glottal excitation. Therefore, Cheon cannot anticipate claim

22 of the present application.

## **II. Rejection of Claims 12-14 Under 35 U.S.C. 102(b)**

Claims 12-14 have been rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,978,286 to Watson. The applicant respectfully disagrees with the Examiner's conclusion.

Watson discloses an artificial larynx, in which an input signal is transformed to an output vibration by using a diaphragm 18 held in a position to be repeatedly struck by a hammer head protrusion 78, which is controlled by an electric motor. It is clear that the transformation from the input signal to the output vibration is not a linear function. In contrast, the independent claim 12 requires that the armature assembly causes a corresponding vibration of the coupler disk according to a linear function of the input signal. Therefore, the invention as claimed in claim 12 is distinguishable over the disclosure of Watson. The applicant respectfully submits that claim 12 is not anticipated by Watson.

Dependent claims 13 and 14 depend from claim 12 and include all the limitations of claim 12. Therefore, claims 13 and 14 should not be considered as being anticipated by Watson.

## **III. Claim Rejections Under 35 U.S.C. 103**

### **Claims 2-4**

*In Item 5* of the Office Action, claims 2-4 were rejected under 35 U.S.C. 103(a) as being unpatentable over Cheon in view of Watson.

Claims 3-4 depend from claim 2, which depends from claim 1. As discussed in Section I, claim 1 should be considered patentable over Cheon because Cheon does not teach a linear transducer as required in claim 1. As discussed in Section II, Watson discloses an artificial larynx using a hammer to repeatedly strike a diaphragm, thereby to transform the input signal to output vibration. Watson also does not teach or suggest a linear transducer to transform the input signal to the output vibration such that the output vibration is a substantially linear function of the input signal. Because neither Cheon nor Watson teaches or suggests a linear transducer, the applicant respectfully submits that Cheon and Watson, either considered alone or in

combination, cannot render the present invention as claimed in claim 1 obvious. Claims 2-4 depend from claim 1, and therefore should be considered patentable over Cheon in view of Watson.

### **Claim 5**

*In Item 6* of the Office Action, claim 5 was rejected under 35 U.S.C. 103(a) as being unpatentable over Cheon in view of Watson, and further in view of Applicant's Background section in the present application.

Claim 5 depends from claim 2, which depends from claim 1. Claim 5 includes all the limitations of claim 1. As discussed above regarding claims 2-4, none of the cited references teaches a linear transducer as required in claim 1. Therefore, Cheon, Watson and the Background in the present application, either considered alone or in combination, cannot render the present invention as claimed in claim 1 obvious. Claim 5 depends from claim 1, and therefore also should be considered patentable over Cheon in view of Watson, and further in view of the Background section in the present application.

### **Claims 6-8**

*In Item 7* of the Office Action, claims 6-8 were rejected under 35 U.S.C. 103(a) as being unpatentable over Cheon in view of Watson, and further in view of U.S. Patent No. 5,128,905 to Arnott.

Claims 6 and 7 depend from claim 2, which depends from claim 1. Claim 8 depends from claim 1. As discussed above regarding claims 2-4, neither Cheon nor Watson teaches or suggests a linear transducer. From the disclosure of Arnott, it is clear that the "linear response" in Arnott (column 2, lines 15-22) is a linear response of a piezoelectric membrane, which is used to transform a mechanical deformation to an electrical signal in the device disclosed in Arnott, but not from an input signal to an output vibration, as claimed in claim 1 of the present application. Therefore, the invention as claimed in claim 1 in the present application is different from the device disclosed in Arnott, which uses a piezoelectric membrane to measure acoustic field. Therefore, claim 1 should be considered patentable over Cheon in view of Watson, and further in view of Arnott. Therefore, dependent claims 6-8 also should be considered patentable

over the cited references.

**Claims 10, 11, 19-21, and 23-25**

*In Item 8* of the Office Action, claims 10, 11, 19-21, and 23-25 were rejected under 35 U.S.C. 103(a) as being unpatentable over Cheon in view of U.S. Patent No. 5,400,434 to Pearson and U.S. Patent No. 4,797,926 to Bronson.

Dependent claim 11 depends from claim 10, which depends from claim 1. Neither Pearson nor Bronson teaches an electro-larynx having a linear transducer. Therefore, claim 1 should be considered patentable over Cheon in view of Pearson and Bronson. Therefore, dependent claims 10 and 11 also should be considered patentable over the cited references.

Claim 19 is an independent claim and claims 20 and 21 depend from claim 19. Claim 19 has been amended by this amendment. The amended claim 19 claims an electro-larynx, which includes a waveform generator and a linear transducer for transforming an input signal generated by the waveform generator to an output vibration of a throat engagement portion, wherein the output vibration is a substantially linear function of the input signal. As discussed above, neither Pearson nor Bronson teaches an electro-larynx having a linear transducer. The applicant respectfully submits that the amended claim 19 is patentable over the cited references now. Dependent claims 20 and 21 depend from claim 19, and therefore, also should be considered patentable over the cited references.

Claims 23-25 depend from claim 22. As discussed in Section I regarding claim 22, Cheon does not disclose an electro-larynx having a waveform generator configured to selectively generate an input signal, which has a harmonic structure corresponding to a normal glottal excitation. Neither Pearson nor Bronson teaches an electro-larynx having a waveform generator configured to selectively generate an input signal, which has a harmonic structure corresponding to a normal glottal excitation. Therefore, claim 22 should be considered patentable over Cheon in view of Pearson and Bronson. Claims 23-25 depend from claim 22 and add more limitations to claim 22. Therefore, claims 23-25 also should be considered patentable over Cheon in view of Pearson and Bronson.

**Claim 15**

*In Item 9* of the Office Action, claim 15 was rejected under 35 U.S.C. 103(a) as being unpatentable over Watson in view of Applicant's Background section in the present application.

Claim 15 depends from claim 12. As discussed above, Watson discloses an artificial larynx, in which an input signal is transformed to an output vibration by using a diaphragm 18 held in a position to be repeatedly struck by a hammer head protrusion 78, which is controlled by an electric motor. It is clear that the transformation from the input signal to the output vibration is not a linear function. Neither of the prior art references teaches an armature assembly that causes a corresponding vibration of the coupler disk according to a linear function of the input signal, as required in claim 12. Therefore, claim 12 and its dependent claim 15 should be considered patentable over the prior art references.

**Claims 16-18**

*In Item 10* of the Office Action, claims 16-18 were rejected under 35 U.S.C. 103(a) as being unpatentable over Watson in view of Arnott.

Claims 16-18 depend from claim 12. As discussed above, neither of the prior art references teaches an armature assembly that causes a corresponding vibration of the coupler disk according to a linear function of the input signal, as required by claim 12. Therefore, claim 12 and its dependent claims 16-18 should be considered patentable over the prior art references.

**Conclusion**

The applicant, accordingly, respectfully submits that in view of the preceding amendments and arguments, claims 1-25 are patentable over the cited references, whether considered alone or in combination, and respectfully request reconsideration and withdrawal of the rejections to these claims under 35 U.S.C. 102(e), 102(b) and 103(a). If a telephone conference will expedite prosecution of the application the Examiner is invited to telephone the undersigned.

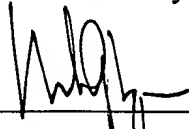
Serial No.: 09/475,390  
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Reply to Office Action of March 7, 2005

No additional costs are believed to be due in connection with the filing of this paper.  
However, the Commissioner is hereby authorized to charge any additional fees, or credit any overpayment, to our Deposit Account No. 50-1133.

Respectfully submitted,

McDermott Will & Emery LLP

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